Public Interest Perspective – California LNG Access Issues and Deliverability of Supply

California Resources Agency Workshop
June 1-2, 2005

Bill Powers, P.E.
Border Power Plant Working Group
tel: (619) 295-2072
www.borderpowerplants.org

California's Energy Action Plan

May 2003 CEC/CPUC Energy Action Plan loading order:

- Increase conservation and energy efficiency to minimize increases in electricity and natural gas demand;
- Meet demand for new generation with renewables and distributed generation;
- Add clean, fossil-fuel, central station generation if renewables not at point to meet all new demand.

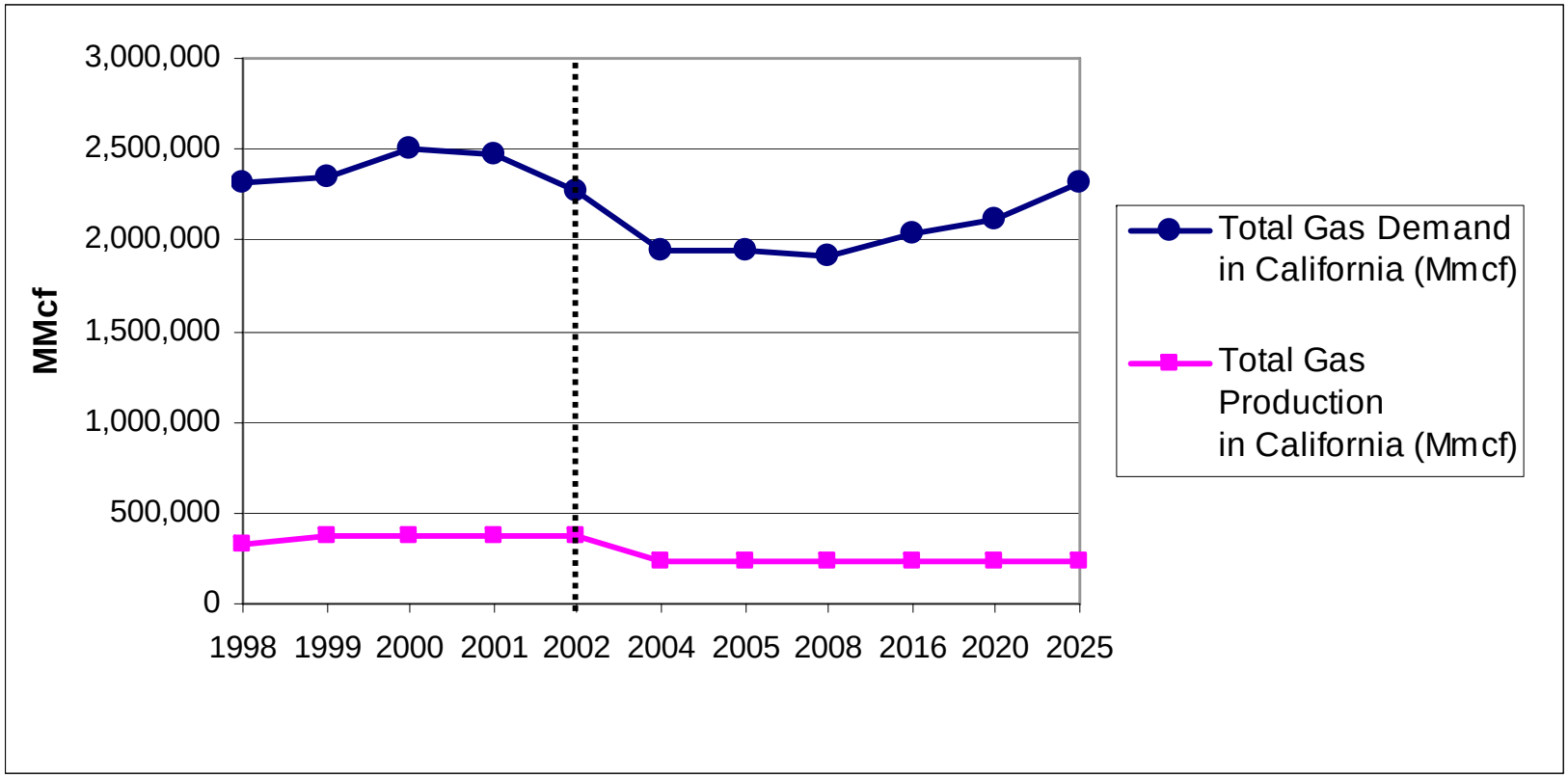
U.S. & California natural gas 101

bcfd = billion cubic feet per day, tcf = trillion cubic feet

U.S. natural gas usage rate	60 bcfd [22 tcf/year]
DOE EIA estimate of U.S. reserves, excluding Alaska	1,400 tcf [60-year supply]
California daily usage rate	5.5 bcfd
Utility core customer usage	1.5 – 2 bcfd
Utility non-core customer usage (powerplants, industrial)	4 – 4.5 bcfd
Capacity of one LNG terminal	1 bcfd
Baja California usage rate	0.1 bcfd

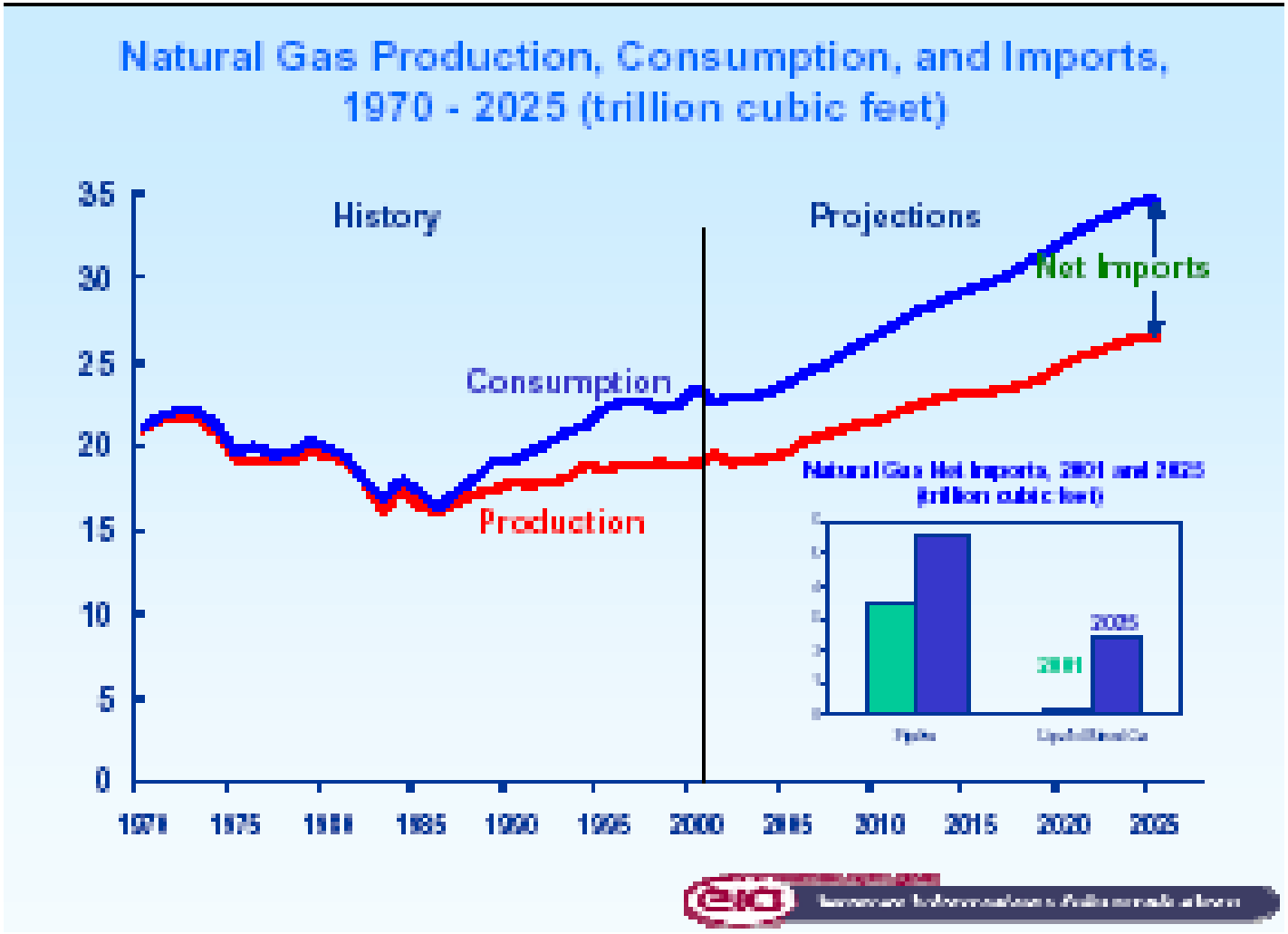
20% decline in natural gas demand in California since 2001

from: CEC presentation, D. Maul, Long Beach LNG Forum, April 2, 2005



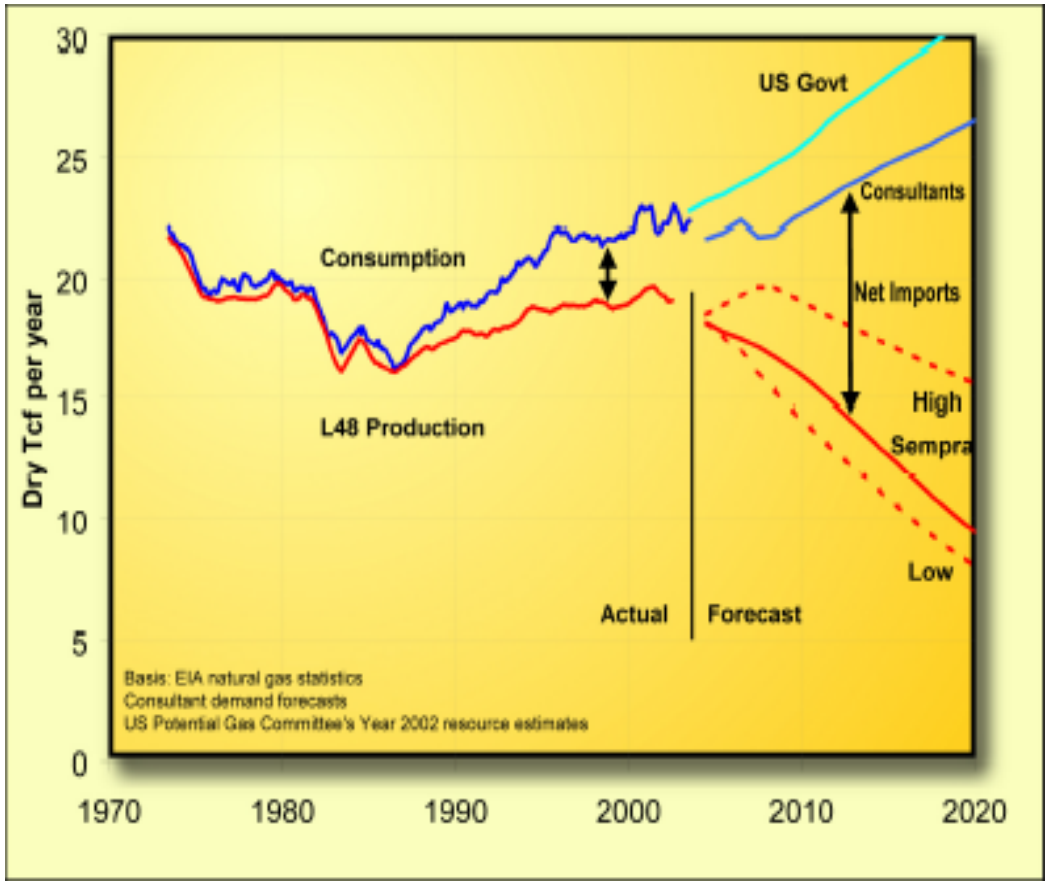
DOE says U.S. domestic natural gas production will rise, along with Canadian production, though may not keep pace with demand

From: James Kendell, DOE EIA, *Current Natural Gas and LNG Projections*, National Association of Regulatory Utility Commissioners, July 29, 2003



Sempra "doomsday" scenario – crisis in domestic production. False.

From: presentation by Greg Bartholomew, VP Gas Strategies, Sempra LNG, **CPUC/CEC natural gas 2006-2016 workshop, December 10, 2003, San Francisco.**



- **"California has little choice but to allow the development of LNG terminals"**
- **"The only decision is where and how"**

California and natural gas needs – decreasing demand is State priority

Gas Demand, Projected Demand Increase, Gas Options	Gas Quantity, mmcfd (million cubic feet per day)
Average daily natural gas use in California, 2004	5,500
Projected change in gas demand by 2016 over 2001 baseline	-20%[a]
Further potential reduction in California gas demand from low-cost energy conservation and renewable energy targets	1,400[b]

Note (a): See CEC graph in Slide 4.

Note (b): Derived from Synapse Energy Economics evaluation submitted in March 23, 2004 RACE coalition comments in CPUC Utility Long-Term Natural Gas Procurement Proceeding, Rulemaking 04-01-25 30,000 Gwh of electric power saved through improved energy efficiency; 30,000 Gwh saved through accelerating renewables from 20% to 33% in 2020. 30,000 Gwh ~ equal to gas throughput of one LNG terminal. Assume 8,000 Btu/kwh mean heat rate for electricity production to account for variable mix of combined-cycle, utility boiler, and simple-cycle power generation. Additional savings possible through accelerated retirement of coastal utility boiler plants and community choice commitments to 40% renewable portfolio standard by 2017.

Overdependence and natural gas price manipulation

CEC Integrated Energy Policy Report, Dec. 2003:

- ". . *Natural gas generation expected to increase from 36% in 2004 to 43% in 2013."*
- *"LNG is opportunity to access supply from other continents, may help downward pressure on price, although overdependence on foreign supply is concern."*

Senator Orrin Hatch, Dec. 2003 – *"Must determine if price surges are result of market forces or manipulation."*[a]

Bipartisan federal legislation proposed to regulate natural gas traders, April 2005.

Sempra, Shell, and BP, partners in Baja LNG project, collectively trade ~50% of natural gas bought/sold in U.S.

a) *Surge in Natural Gas Prices Brings Fear of Sharply Higher Heating Costs*, Canadian Press, 12/16/03

April 2005 legislation to “rein in” natural gas traders

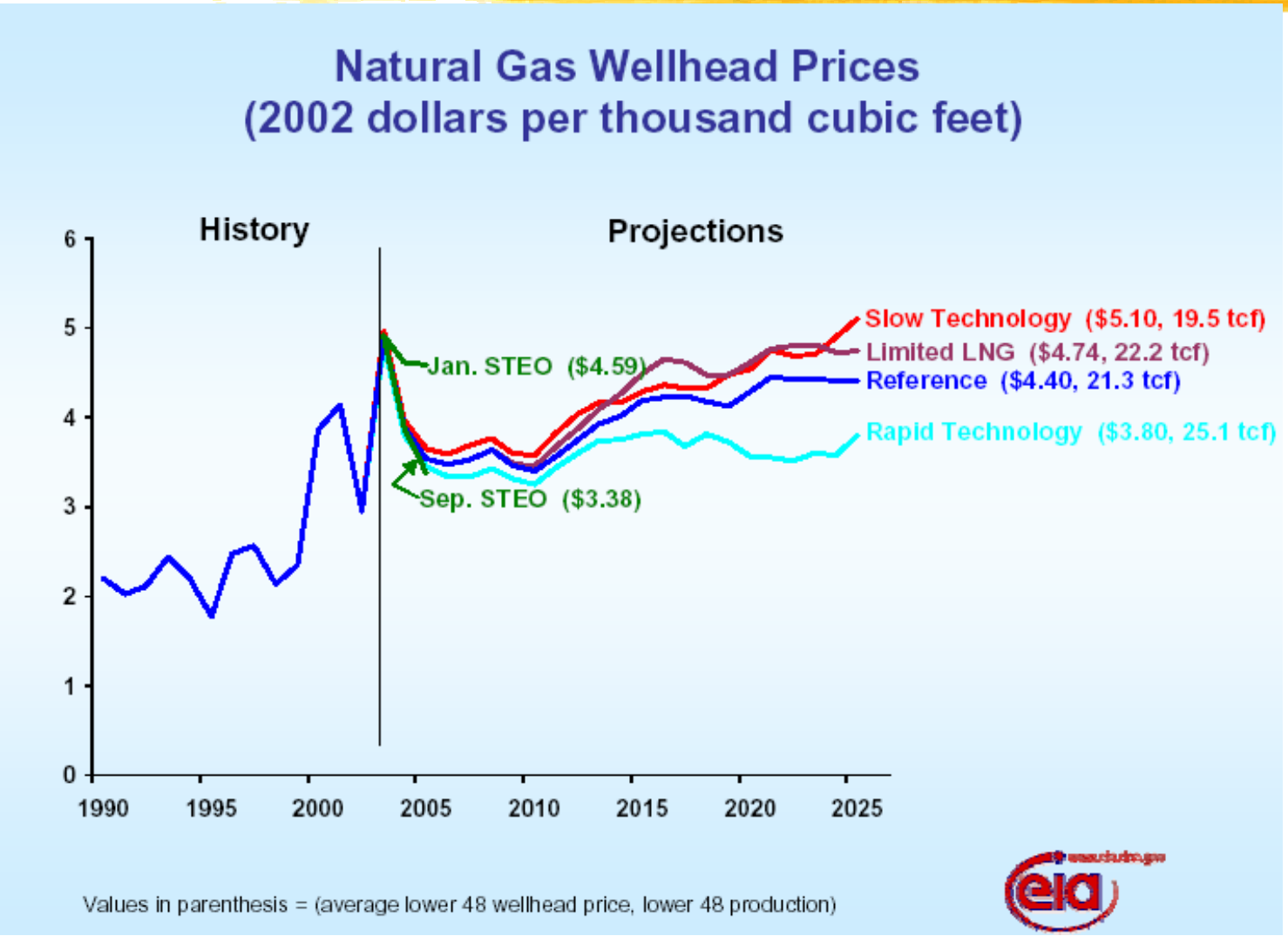
- Bipartisan federal legislation by Reps. Sam Graves (R-MO) and John Barrow (D-GA) introduced to "*bring some stability, predictability and reliability*" back to natural gas market.
- Underscores that recent gas price spikes are a result of increased speculative trading.
- Imposes new price limits on natural gas futures trading.
- Blames recent price spikes in large part on implementation of the Commodity Futures Modernization Act of 2000 which "*altered the fundamental trading rules for natural gas allowing for greater speculation by an already limited number of traders*.”
- California missing-in-action in push for legislative remedy to natural gas market gaming.

Legislation targets market power and extreme price volatility

- Numerous trading firms (including Shell Trading) and traders have paid hundreds of millions of dollars to the Commodity Futures Trading Commission and FERC to settle charges of gas market manipulation.
- Market is not transparent. "*Regulators do not know who is trading or the volume individual trades may hold. One trader (including hedge funds) may easily control a large percentage of the market, significantly increasing prices*."
- Futures prices are ultra-volatile because the price limits of the 1990s were removed. "*Unlike other commodities, there are no meaningful and effective 'circuit breakers' to prevent extreme price volatility*."
- Legislation would reform the Commodity Exchange Act, which is being reauthorized this year, to "*restore transparency and address price volatility in the natural gas futures market*."

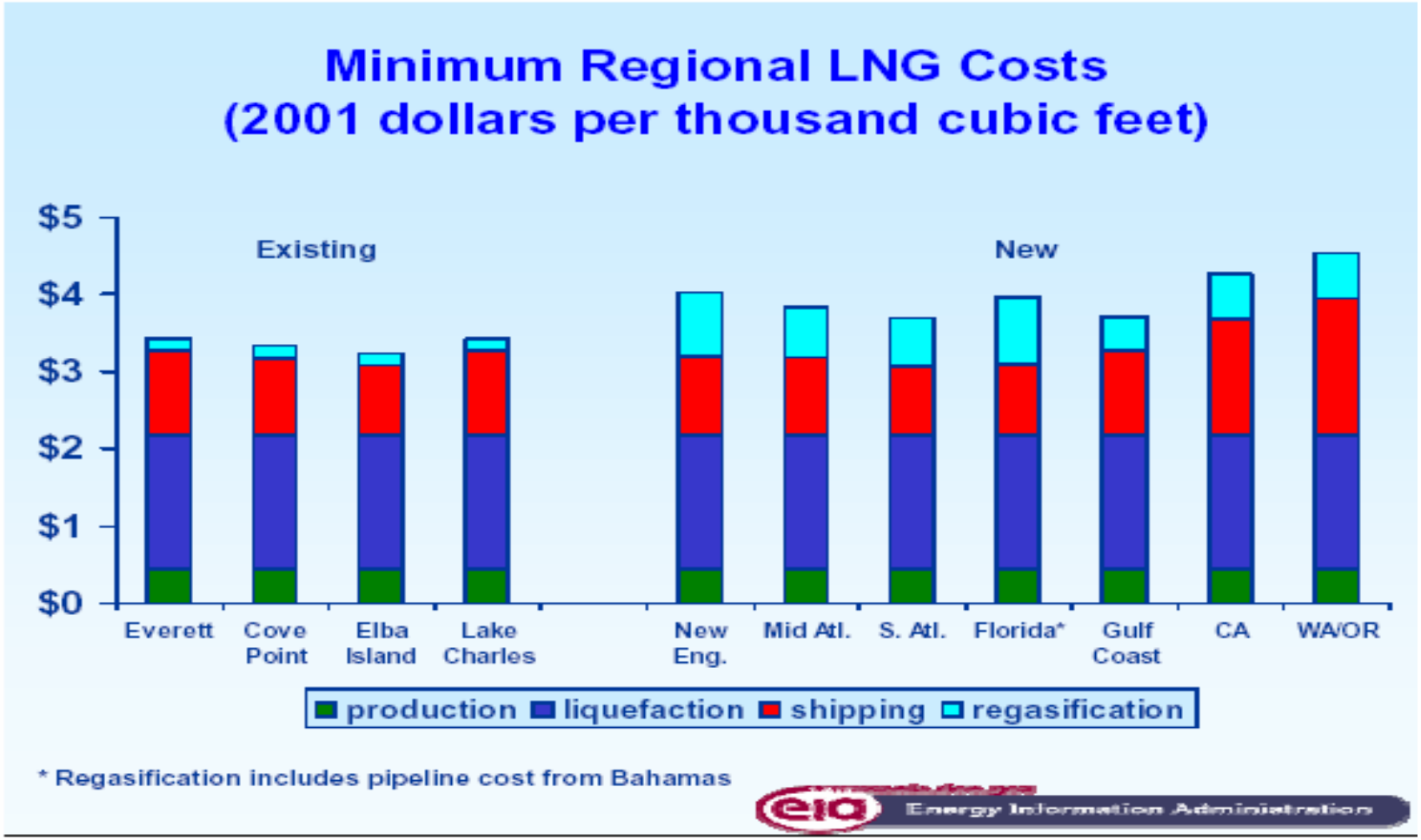
March 2004 DOE projection: domestic gas price in $3.80/MMBtu - $4.40/MMBtu range in 2025

From: Dana Van Wagoner, DOE EIA, *Domestic Natural Gas Supply: A Large Resource Base Does Not Guarantee Low Long-Term Prices*, NEMS/AEO Conference, March 23, 2004



California LNG at ~$4.50/MMBtu, ability to compete in doubt in rational natural gas market

From: James Kendell, DOE EIA, *Current Natural Gas and LNG Projections*, National Association of Regulatory Utility Commissioners, July 29, 2003



Solution to LNG price risk in gas-on-gas competition? Shell makes case for core contracts at CEC/CPUC workshop, 12/03

Baja California LNG

What is Needed in California

2. Timing is critical

- Ongoing open season process on BNP, TGN and GBN pipelines
  - ✓ Firm commitments by September 1, 2004
- Financial commitments must be made by LNG sponsors in 2004 to meet construction goals
- Expiration of El Paso and Transwestern pipeline contracts
  - ✓ LNG can be an alternative to long-term pipeline commitments
  - ✓ LNG must be a tangible, feasible alternative at the time SoCal Gas makes its decisions on interstate pipeline contract renewal

Shell Gas & Power

CPUC complies - invitation to ratepayer exposure + affliate transaction conflicts

- CPUC authorizes (Sept. 2004) Southern California Gas Co. to displace 1,400 mmcfd of firm natural gas pipeline capacity, the equivalent throughput of two LNG terminals, with LNG supplies;
- March 2004 responses of Transwestern and El Paso, the pipeline companies that would be displaced, to CPUC proposal to allow substitution of LNG supplies for domestic natural gas firm capacity;
- El Paso: *"If utilities decline to hold EPNG capacity now, it may be unavailable to California in the future. Given the Commission's overarching goal of promising price stability and supply diversity/security, the Commission should consider requiring the utilities to continue to hold this capacity as a prudent hedge against an uncertain future."*
- Transwestern: *"Important that utilities not sacrifice long-term supply reliability in the pursuit of supply diversity."*
- CPUC decision being challenged over lack of evidentiary process.

USCG puts GoM LNG terminals on hold – concern over impacts of seawater regasification

- Same issue in Baja with Sempra/Shell/BP and Chevron terminals.
- No U.S. regulatory authority, either environmental or market regulatory, in Mexico.
- No California LNG proposal includes seawater regasification.

Sempra/Shell/BP Baja LNG project

1 bcfd at startup, expansion to 2 bcfd planned

source: Institute of Americas LNG 2005

Access and market issues - Sempra/Shell/BP Baja LNG project

- Market power concern - partners in project dominate U.S. natural gas trading business (nearly 50% of market);
- Closed access facility;
- Affliate transactions between Sempra (or partners) and affliates SoCalGas and SDGE are inevitable and likely critical to financial viability of project;
- Project will become critical infrastructure if much of SoCalGas/SDGE core natural gas needs supplied by LNG supplies from project;
- California has no regulatory authority in Mexico;
- Supply reliability of facility may be less assured if anti-multinational president elected in Mexico in 2006.

Current California approach locks ratepayers into taking the risk

Current California model (aka Japanese model)	East Coast model
$5 billion LNG supply chain, no spot cargos.	Spot cargos, <$250 million to get started.
Long-term utility ratepayer contracts required to convince investors.	LNG shipper takes all risk.
LNG substitutes for domestic gas long-term, no competition. “Supply diversity” premium for LNG.	gas-on-gas competition w/domestic gas provides price relief.

Excess Far East LNG liquefaction capacity, 1 bcfd available for spot cargos

8 million tons (mt) LNG = ~1 billion cubic feet per day throughput source of table: CERA, 2005

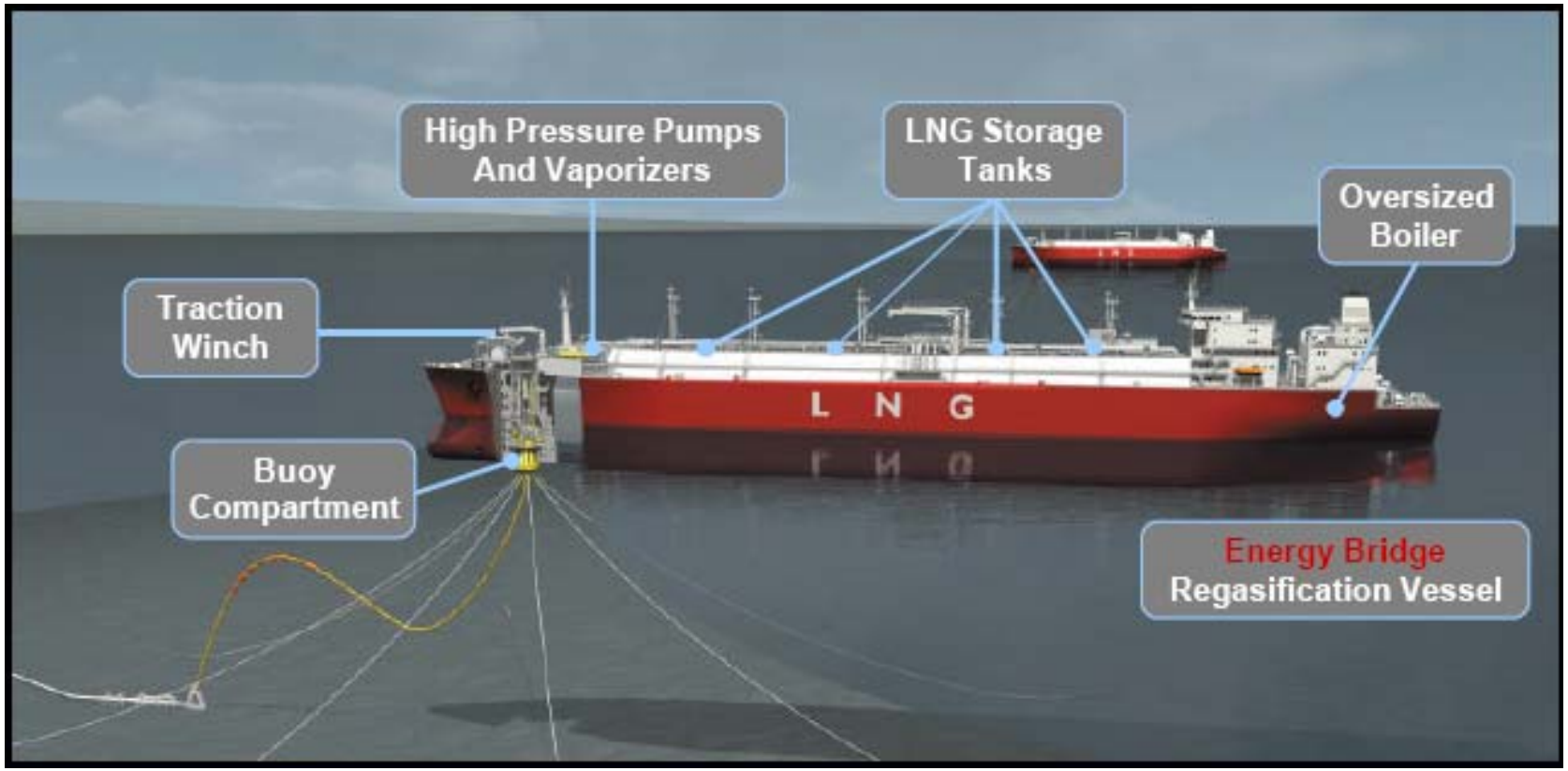
GLOBAL LNG BALANCE

Global LNG balance 2003-2006 (mt)

	2003		2004		2005		2006	
	H1	*H2*	*H1*	*H2*	*H1*	*H2*	*H1*	*H2*
Imports								
Atlantic Basin	18.8	22.4	22.0	22.8	23.2	25.8	29.7	32.2
Pacific Basin	42.6	41.7	43.0	44.6	44.7	46.4	47.7	47.8
Total	61.4	64.1	65.0	67.4	67.9	72.2	77.4	80.0
Liquefaction Capacity								
Atlantic Basin	20.0	21.4	19.2	20.2	22.4	26.1	29.7	32.2
Pacific Basin	44.5	43.7	45.5	49.0	50.0	50.4	53.3	55.4
Total	64.5	65.1	64.7	69.2	72.4	76.5	83.0	87.6
Global Capacity Utilization	**95.1%**	**98.5%**	**100.5%**	**97.4%**	**93.7%**	**94.5%**	**93.3%**	**91.3%**

Newest U.S. LNG terminal – March 2005 offshore, hot spot cargos delivered upstream of Henry Hub gas processing

from: K. Eisbrenner, Excelerate Energy, Institute of Americas LNG 2005, February 2005.



LNG shipped into Gulf of Mexico has same beneficial effect on California gas supplies

- Increase in LNG imports to GoM relieves pressure on supply basins currently serving California;
- Major competitors for California LNG market, Chevron, Shell, and Sempra, also have projects in pipeline in GoM;
- Shell's GoM project in Altamira, Mexico will receive LNG from Nigeria that otherwise would be flared to atmosphere;
- In contrast, greenfield Far East LNG projects proposed by Chevron, Shell, and Sempra, would put heavy pressure on some of the most fragile environments in the Pacific Rim;
- If LNG proponents can not meet California access and gas quality requirements, Plan B is the GoM.

LNG suppliers must meet ARB natural gas specification

- The increase in annual NO_x emissions in the SoCalGas service area could be as high as 1,000 tons/year or more if 1 bcfd of 1,120 Btu/ft^3 LNG enters the local market;[1]
- This is equivalent to NO_x emissions from ten new 500 MW combined-cycle power plants;
- Ultra-low emission standards will be phased-in for CNG vehicles in 2007-2010 timeframe;
- Loosening of specification now could impact knock resistance and make it considerably more difficult and expensive for CNG vehicle manufacturers to compete;
- More air quality impact research clearly needed before even considering an ARB specification change;
- LNG is not critical to California – onus should be on LNG suppliers to meet ARB specification, not on California to accommodate supplier's desire to minimize costs.

1) Stationary units: assume base NO_x emission rate of 50 ppm at 3% O_2 increases by 10% as result of 10% Btu increase.

Conclusions

- LNG is not a necessity for California's economic vitality;
- In this context, function of LNG (if any) should be ancillary gas-on-gas spot market competition;
- Utility core contracts should be explicitly prohibited between affliates or partners of affliates to minimize the potential for non-transparent contracting;
- Spot cargo model will work for at least 5-6 years due to excess Far East LNG production capacity;
- Spot model puts all price risk on LNG shipper and protects utility ratepayers from long-term contract exposure;
- It is the responsibility of the LNG supplier to meet current ARB natural gas quality specification – no reason for California to loosen specification and degrade air quality for a non-essential fuel resource.